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DISCUSSION

Sir Henry Wade called for a vote of thanks to Professor Ellis for his most interesting paper, and complimented him on the manner in which he had dealt with the problem from all angles and referred briefly to a few points on the social side of the problem that had been discussed.

Dr Fahmy said that, while Cæsarean section reduces enormously the risk of foetal damage in the properly chosen cases, yet an infant born by abdominal section could suffer intracranial hæmorrhage and die thereafter.

In regard to pregnancy toxæmia—while there was some evidence to show that dietary factors play a part, yet it was a well recognised fact that toxæmia occurred irrespective of the social class to which the patient might belong.

Professor McNeil said that the whole question of the wastage of infant life was receiving increasing attention, and it was interesting to look back over a period of one hundred years and realise how much progress had been made in the last thirty or forty years. It was a curious fact, however, that one hundred years ago the infant mortality rate was less in Scotland than in England—now the reverse was the state of affairs.

Dr Martin referred to a ten year survey she had carried through of still-born and neonatal deaths in the Elsie Inglis Hospital and, in the deaths due to congenital abnormality, the major factor was *spina bifida*. A careful scrutiny of the history of the mothers in these cases had provided no clue to their causation.

She had been surprised at the unexpectedly high number of babies who suffered from shock through Cæsarean births.

Dr Traquair referred to retinal hæmorrhages in the newborn. These were usually ascribed to a prolonged second stage of labour. He was interested to know if they also occurred in infants delivered by Cæsarian section.

Professor Ellis, replying, said he did not maintain that asphyxia could never produce cerebral hæmorrhage, but that Ford had failed to produce anatomical lesions of the brain experimentally in asphyxiated animals; when cerebral hæmorrhage and asphyxia were found in association in the newborn it was often impossible to say which was cause and which effect.

THE TRAVEL JOURNALS OF PETER CAMPER (1722-1789) *

ANATOMIST, ARTIST, AND OBSTETRICIAN

By DOUGLAS GUTHRIE, M.D., F.R.C.S. ED.

ALMOST two hundred years ago a young Dutchman, newly arrived in London, made the following entry in his diary: "January 5th, 1749. In the morning at eleven o'clock I enrolled in Dr Smellie's course on midwifery for three guineas."

The student, Peter Camper, was a native of Leyden. Born of wealthy parents in this great centre of culture, he received an excellent education, and it soon became obvious that he possessed talent and ability. His fondness for drawing and painting was fostered by the best teachers, his interest in foreign languages was encouraged, and when he took his M.D. degree in 1746, with a thesis on the physiology of vision, he was a well-educated man in every sense of the term (Fig. 1).

Untrammelled by the need to make money, which is the death of many a scientific enterprise, Peter Camper determined to devote some time to post-graduate study. With his customary keenness and enthusiasm he had entered general practice at Leyden and had been especially attracted to the study of obstetrics, although there was no leading exponent of the subject in Leyden at that time, despite its galaxy of talent. Boerhaave had died in 1738 and the fame of Leyden as a medical school was declining, although Albinus in the Chair of Anatomy, Gaubius in Chemistry, and others scarcely less eminent, were among Camper's teachers. Very soon, in the course of his obstetric practice he was faced with what he called "the tragedy of the wedged head." In the previous century, Roger Roonhuysen of Amsterdam had acquired a great reputation by the use of a secret instrument, a lever or vectis, which, it was said, had been sold to him by Dr Hugh Chamberlen, and which, indeed, turned out to be but a single blade of the obstetric forceps. By the time that Camper entered practice, forceps had come into general use although still a subject of violent controversy, and Roonhuysen, with his lever, still had many followers. In two cases Camper had used forceps but had failed to deliver a living child. Baffled and distressed by his experience he was eager for further information. Just then, a Scottish student at Leyden, of whom there were many, told him that in London Dr William Smellie was acquiring a great reputation as a teacher of midwifery.

Peter Camper at once decided to visit England. On 16th December 1748, he embarked in the packet boat at Helvoet, and arrived at Harwich sixty hours later, after a stormy passage. Continu-

* Address to a meeting of the Edinburgh Obstetrical Society, 10th December 1947.



ing to London by stage-coach, he followed the practice of every learned foreign visitor by calling on Dr Richard Mead, who had studied at Leyden under Boerhaave's predecessor, the versatile Edinburgh graduate, Dr Archibald Pitcairne. Mead possessed not only the best library and art collection but also the most fashionable practice in London. Camper writes, "December 27th, 1748; I went to Dr Mead's and saw an original head of Homer in bronze, paintings of Erasmus by Holbein, of Vesalius by Titian, and many others."

The entry of 2nd January 1749 suggests that Camper had come to London to study art as well as obstetrics; "I was introduced at the Painters' Academy in London and was accepted as a Member at a contribution of two guineas." It seems fairly obvious, however, that the main objective of this first journey to England was to attend Smellie's course of instruction in obstetrics (Fig. 3). "January 21st. Saw Dr Smellie deliver a child with the forceps; the head was slightly bruised and the child alive."

Of course Camper never dreamed, any more than did Pepys, that his diary would be published. He wrote it for his own use, and after the above entry, he breaks off, and interpolates his notes of Smellie's lectures. The notes, though brief, show very clearly the magnitude of Smellie's achievement. Camper's diary, preserved in the University of Amsterdam, was published in Dutch and English, by Dr Nuyens in 1939, but it is not so well known as it appears to deserve.

THE CAREER OF DR WILLIAM SMELLIE

Before dealing with Camper's notes, however, it may be advisable to remind you of the life and work of his teacher, The Master of British Midwifery (Fig. 2). William Smellie's decision to abandon his country practice in Lanark in order to become an obstetrician in London is one of the most dramatic episodes in medical history.

Of his early life we know little, and that little is derived from the evidence of the family tombstone in Lanark churchyard which tells us of his parentage, of his birth in 1697 and of his wife Eupham Borland who died seven years after him, while his own simple epitaph reads, "This is Doctor William Smellie's burial place, who died March 5th 1763, aged 66." The tomb has been protected by a little chapel, erected by the obstetricians of Glasgow and Edinburgh as a tribute to the great master of their craft.

Although he became M.D. of Glasgow in 1745, there is no proof that Smellie was originally a graduate of any university. It appears probable that he entered the profession by the gateway of apprenticeship, and it has been surmised that he was apprenticed to Dr John Gordon of Glasgow, to whom he refers as "my old acquaintance and senior practitioner in the art of midwifery." There is documentary proof of the fact that Tobias Smollett was apprenticed to Gordon, probably at the same time as Smellie, and it is significant that both Smellie and Smollett went to London in 1739, perhaps even together.

Glaister argues in favour of this idea, and it is interesting to think of Smellie in the company of "Roderick Random." Certainly Smellie's intimacy with Smollett was life-long, and it is also certain that Smollett assisted his friend in the writing of his treatise and that he edited the third volume.

For seventeen years, from 1722 to 1739, Smellie had practised in his native town and neighbourhood. There were then few midwives in rural areas, and the attitude of patient to doctor, and also of midwife to doctor, was more friendly and intimate than it was in larger centres. Accordingly Smellie did not lack obstetric practice, and no less than 62 of the cases described in his treatise were attended during the Lanark days. The unsolved problems of midwifery, and the mortality among infants and mothers, disturbed him sorely. At last, profoundly dissatisfied with the current teaching, he journeyed to London where he soon found "that nothing was to be learned there," and then to Paris where he attended a course on midwifery under Gregoire, who was the first to teach obstetrics at the Hotel Dieu, and who was succeeded by his son. "There likewise I was much disappointed in my expectation," wrote Smellie, ". . . his machine was a piece of basket work, upon which he could not clearly explain the difficulties." Returning to London, Smellie devised his own method of teaching, and he worked out an explanation of the mechanism of labour which was his greatest contribution to obstetrics. "Having lost several children and sometimes the mother, I began to alter my opinion and consult my own reason." Smellie had been in London for nine years when he was visited by Peter Camper, although his famous treatise on midwifery did not appear until three years later. That treatise ultimately extended to three volumes, the second and third consisting of case records. The first volume appeared in 1752, the second in 1754, and the third, edited by Smollett, after Smellie's death, in 1774. There were numerous editions and the work was translated into French, German and Dutch. The treatise contained no illustrations, but these were published separately, in 1754, under the title, *A Set of Anatomical Tables*. Of the forty plates, eleven were drawn by Peter Camper, and the remainder by Rymdyk who also drew the magnificent illustrations of the gravid uterus for William Hunter's monumental work.

Incidentally, it may be remarked that the only known portrait of Smellie, presented to the Royal College of Surgeons of Edinburgh by Mr Harvie, W.S., son of Dr John Harvie who succeeded Smellie in practice in London and who married his niece, is usually regarded as having been painted by Smellie himself. The belief is based upon the statement in Smellie's Will that he bequeath to the Grammar School of Lanark "three pictures, my father's, my mother's, and my own, drawn by myself in 1719." But there is no other evidence of Smellie's prowess as an artist. He made no attempt to illustrate his own writings, and the portrait in question is the work of an expert

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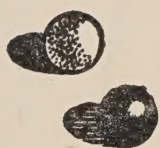
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artist. It appears very unlikely that Smellie was an artist, although he may have been an amateur musician, as witness his bequest of "nine English flocks" and some music books.

The library which Smellie bequeathed to his native town of Lanark is still preserved there but is seldom visited or consulted. One hopes that some day it may be transferred to an academic centre where it might prove of real value, and not be a mere curio.

Smellie's treatise owes nothing to tradition, but is entirely the fruit of experience. In the preface he tells us that the book was not "cooked up in a hurry" but that it had taken him six years to commit his lectures to paper. Furthermore, he states that "during 10 years I have given 280 courses of midwifery to more than 900 pupils and in that series of courses 1150 poor women have been delivered." He also remarks, "my own private practice hath been pretty extensive." The treatise commences with an excellent historical survey which is still well worthy of study, and which concludes with the words; "We ought to be ashamed of ourselves for the little improvement we have made in so many centuries."

Fifty years ago Smellie had an able biographer in the person of another son of Lanark, Professor John Glaister. Glaister covered the ground most thoroughly, although perhaps he gave too much consideration to the petty feuds of the time, and to the stupid criticisms of Smellie's work. Were he alive to-day, Glaister would be keenly interested in the revaluation of Smellie's achievement in the light of Peter Camper's diary.

SMELLIE'S CONTEMPORARIES IN OBSTETRICS

And now, before returning to view the work of Smellie through the eyes of his young Dutch student, it may be useful to mention, very briefly, the position of some of Smellie's obstetrical colleagues. When Smellie went to London, the most fashionable obstetrician (man-midwife to the populace, accoucheur to the intelligentsia) was Sir Richard Manningham. Manningham was the first to establish maternity wards, in 1739, and he achieved fame, or at least notoriety, by his exposure of Mary Tofts of Godalming, who claimed to have given birth to 15 rabbits, and who had gained money and sympathy by her fraud.

John Maubray, author of *The Female Physician*, the first to teach midwifery systematically in England, who practised midwifery from his house in New Bond Street, had died several years before Smellie's arrival. For the most part, midwifery was still in the hands of midwives who called in a surgeon in case of emergency. The man-midwife had not yet acquired a worthy status; he was not eligible for admission to the College of Physicians, and the number of such practitioners was small. This antagonism was less apparent in France, where the midwives were of good education and high status. In Paris there had been schools of instruction for midwives even in the seventeenth century

when Louise Bourgeois was the first midwife to publish a work on obstetrics (1609), she set a standard which was fully upheld in the following century by Maire-Louise La Chapelle (1769-1821) and by her more famous colleague Marie Anne Boivin (1773-1847). In Britain, however, the Sairey Gamps and Betsy Prigs remained a reproach to their calling. Although Smellie suffered at the hands of certain of those midwives, he bore their insults with restraint and dignity, holding that "gentle methods will prevent that mutual calumny and abuse which too often prevail."

When Smellie came to London, Fielding Ould, who also had studied in Paris under Gregoire, had just commenced his distinguished career in Dublin, where he was to succeed Bartholomew Mosse in 1759 as Master of the Rotunda Hospital.

The north of England had a famous obstetrician in the person of John Burton of York, the Dr Slop of *Tristram Shandy*, although in real life he was not quite so grotesque a figure as he is in the novel. His "extractor," you may recollect, slipped on one occasion and knocked out several of his front teeth; it was certainly a much more dangerous weapon than other patterns of obstetric forceps (Fig. 6). As was perhaps natural, he smarted under the satire of Sterne, as well as the indignity of imprisonment as a Jacobite. The failure of his *New System of Midwifery* to achieve a success equal to that of Smellie's treatise, was the last straw, and he attacked Smellie in a lengthy public letter. Some of his criticism was justified but, as so often happens, he went too far, and Smellie, very wisely, paid no attention to his baseless and bitter accusations.

Turning from Smellie's chief critic to his closest friend, there must be mentioned the name of William Hunter who came, also from Lanarkshire where he had shared a practice in Hamilton with William Cullen, to assist Smellie for a time and to reside with him in Pall Mall in 1740. Although somewhat overshadowed by his brother John, William Hunter became eminent as an anatomist and obstetrician, founding the Windmill Street School of Anatomy in 1770, practising as the most fashionable obstetrician of his day, and combining the two branches of medical science in his handsome folio work, *The Anatomy of the Human Gravid Uterus*. Hunter's friendship with Smellie was long and intimate, as is shown by the letters which passed between them, some of which have been preserved.

The fact that Smellie's fame had reached Holland shows that he had acquired a high reputation as a teacher within the first eight years of his residence in London. Returning to Camper's diary as our source of information, we find his recording that "the famous Dr Smellie lectures in English, and usually completes his course in a fortnight, devoting at least two hours daily to his lectures." Camper goes on to describe the obstetric models or "machines," as Smellie called them, each consisting of "a real pelvis covered with leather and a foetus made of wood and also leather covered. The skull bones are

moveable and kept up with springs, the nose is inset, with a spring, the jaw bone jointed and moveable. Likewise, the after-birth is made of leather." "The parts have been made with such remarkable skill that all the necessary functions of parturition are performed by working models."

I must not weary you with too many extracts from Camper's notes of Smellie's lectures, but perhaps a few quotations will suffice to illustrate the nature of his teaching.

CAMPER'S NOTES OF SMELLIE'S LECTURES

"Dr Smellie gives the exact measurements of the pelvis and is the first, I believe, to have applied them in practice. He asserts that the Irish man (Fielding Ould), who was the first to describe the oblique descent of the head into the pelvis, threw great light on the problem for him." Camper goes on to record how the head, having entered the pelvis, gradually turns so that its long diameter may correspond with the long antero-posterior diameter of the pelvic outlet, and he gives details of the measurements.

Smellie, himself, had described in his treatise how, in studying the mechanism of labour, he found the key to many obstetric problems. "I surveyed the dimensions and form of the pelvis, together with the figure of the child's head, and from the knowledge of these things I not only delivered with greater ease and safety than before but also had the satisfaction to find in teaching that I could convey a more distinct idea of the art." Deventer of The Hague, a century earlier, had noted the influence of pelvic deformities upon labour, but Smellie carried the investigation much further.

Camper's notes of Smellie's second lecture relate that "he has preserved in spirit the body of a woman who died shortly after delivery, the size of whose pelvis between sacrum and pubis, was diminished to less than three inches. He uses this body for students to insert their hands so that they may accustom themselves to the practice." After dealing with the diagnosis of pregnancy and noting that "exploration with the finger shows no sure signs in the first months," he discusses the connection between placenta and uterus, a problem which also engaged the attention of William Hunter. "A midwife of age and experience, when asked by Smellie why she had not cut the cord, replied that she never did so until the pulse-beat ceased, as this made the infant strong." Smellie also told his class that if a placenta, delivered before the foetus, was kept in warm water, it recovered and the circulation continued, while not a drop of blood stained the water. Nothing was plainer, he affirmed, than that there was no anastomosis between the vessels of the placenta and those of the uterus.

In lecture three, Smellie discusses the vomiting of pregnancy. In his view, no ill is to be feared. "On the contrary it is rather an advantage, and helps to stretch the uterus." Camper adds a note:

"When I heard the Doctor a second time, he did not maintain so strongly that vomiting was good for stretching the uterus. He said, 'Others allege that vomiting stretches the uterus'." In Smellie's view, "Swelling of the labia, so alarming in appearance, seldom obstructs labour," and Camper makes the observation, "I had such a case at Leyden, and the Irish Doctor Macnamara, like myself, feared everything would be torn at the birth," but "Contrary to expectation, there was not the slightest laceration."

Before Smellie's day it was commonly believed that the foetus lay head uppermost in the uterus until the seventh month, and that it "then toppled over, in order," so Burton stated, "to be ready to crawl out into the world on its hands and knees," (Fig. 5). Smellie taught (as we read in lecture four), "that the foetus during the whole period of gestation is placed with the head downwards."

Dealing now with abortion, Camper continues his notes; "Dr Smellie believes that repeated miscarriage is due to the ovum sticking in the neck of the uterus, which cannot expand. The ovum dies and is expelled. Dr Smellie can do nothing to prevent miscarriages; all that he is anxious to prevent is excessive loss of blood."

On the subject of infant resuscitation, Camper notes that, "Some foetuses do not at once start breathing at birth. Smellie relates a case where the accoucheur put his own face next the infant's and inflated the lungs and it at once began to breathe. Dr Hunter had a similar successful case but Dr Smellie has never been successful with the method."

The sixth lecture is of great interest, as Smellie then describes his experience with forceps, which, he says, "should never be used unless there is urgent necessity." To quote again from Camper: "Dr Smellie deals with the use of the fillets, which instrument he regards as dangerous and based on an incorrect idea of the situation of the head in delivery." In his treatise, Smellie mentions that "the fillet of Mauriceau is fixed with much trouble and is, after all, of very little use." He adds that Mauriceau "was ignorant of the forceps," and he also states that Amand's net is "ingenious, but is not applied without great trouble."

It is not necessary, in this paper, to review the story of the forceps, the family secret of the Chamberlens for over a century. In 1735, Alexander Butter of Edinburgh, published his account of Dusée's forceps, (Fig. 4) and this was read by Smellie, who promptly introduced the forceps into his own practice. The blades were not fenestrated, and could be fixed in two positions. When he went to London, Smellie devised the English lock, and he had his forceps made of hard wood, to avoid alarming the patient, and later they were of metal having the blades covered with strips of leather, "to be newly covered every time of using." The pelvic curve, adopted by Smellie, is acknowledged to have been the invention of Benjamin Pugh of Chelmsford about 1750 (Fig. 7). A three-bladed instrument designed by André Levret,

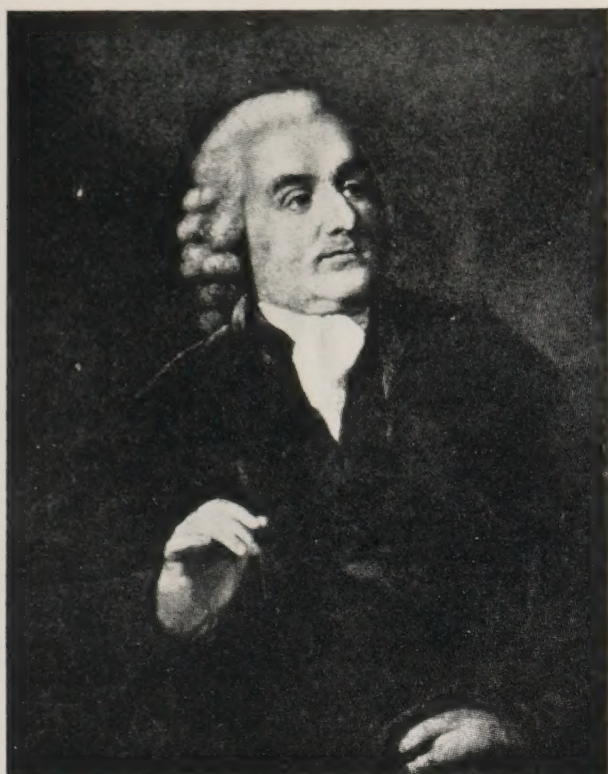


FIG. 1.—Peter Camper, 1712-1789.

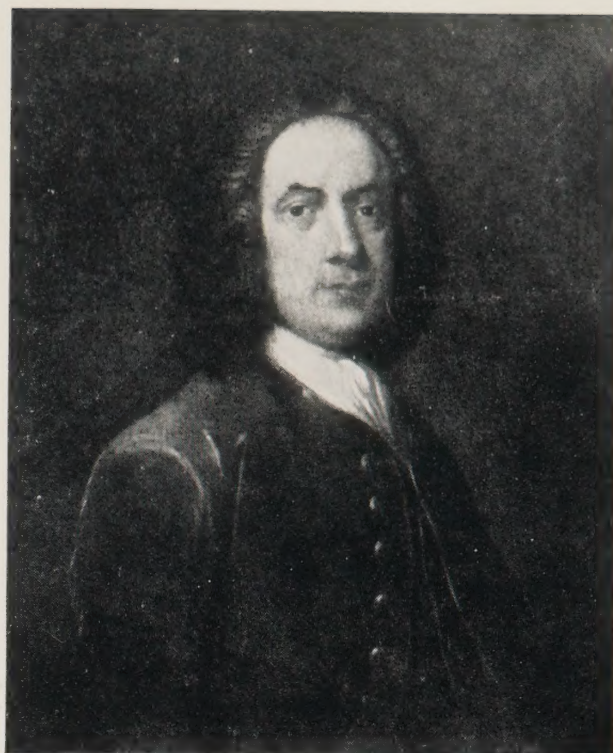


FIG. 2.—William Smellie, 1697-1763.

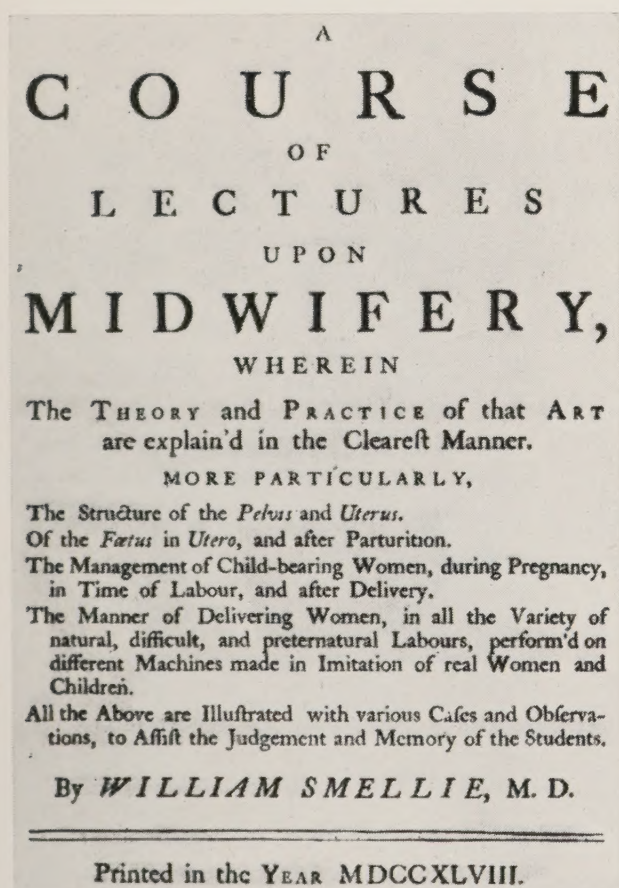


FIG. 3.—Syllabus of Smellie's Lectures, 1748.

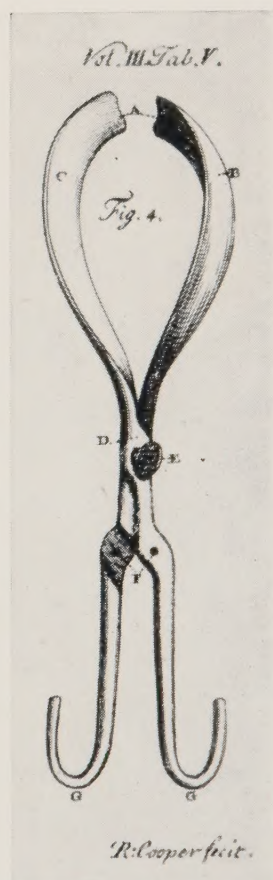


FIG. 4.—Dusée's Forceps, as illustrated in the paper by Dr A. Butter, noticed by Smellie in 1735 (*Medical Essays and Observations*, Edinburgh, 1735).

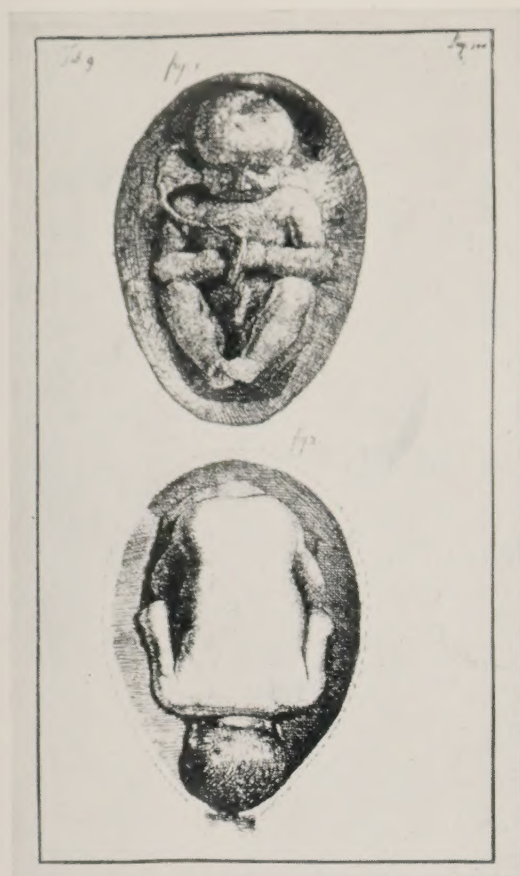


FIG. 5.—Positions of Foetus in Utero, according to Burton; 1. before; 2. after seventh month.

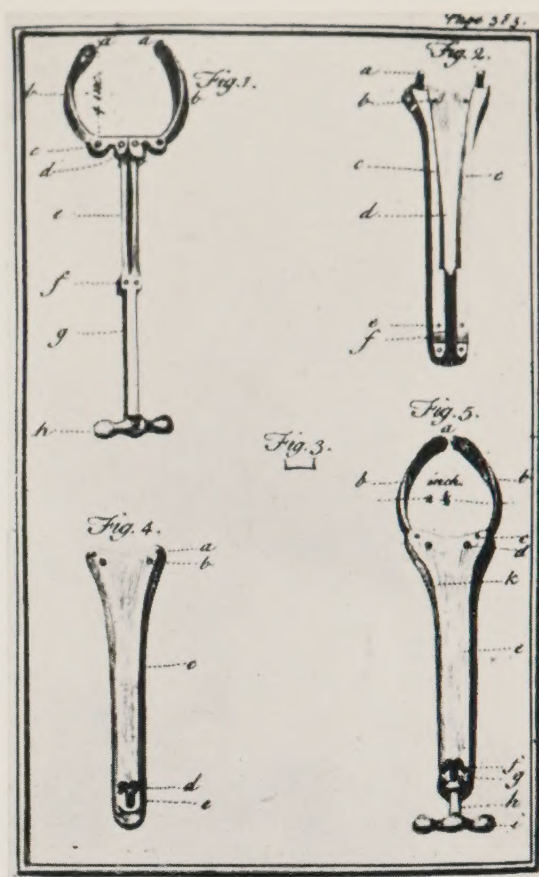


FIG. 6.—Burton's Obstetric Forceps, or "Extractor."



FIG. 7.—Application of Forceps to After-coming Head, as illustrated by Smellie.

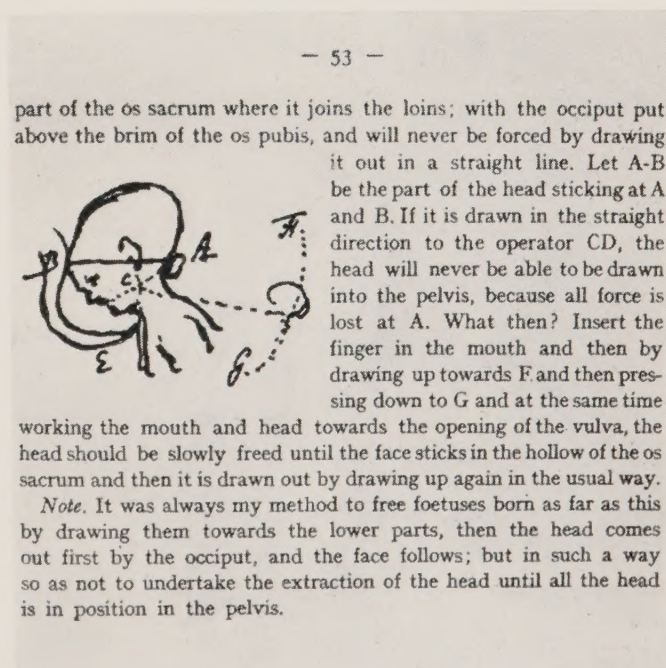


FIG. 8.—Sketch by Peter Camper of Smellie's Method of delivering the Head in Breech Presentation. (Camper's Diary.)

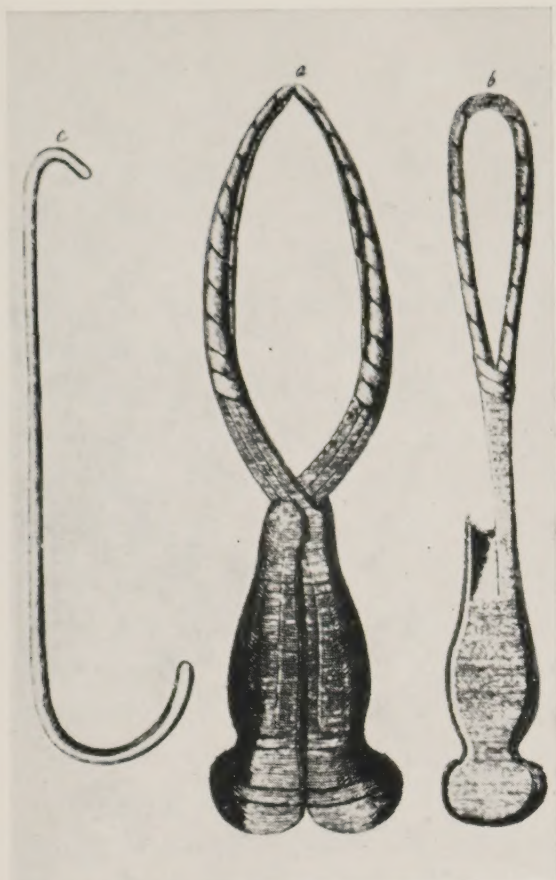


FIG. 9.—A. Blunt Hook or Crotchet.
B. Smellie's Forceps with Leather-covered blades.

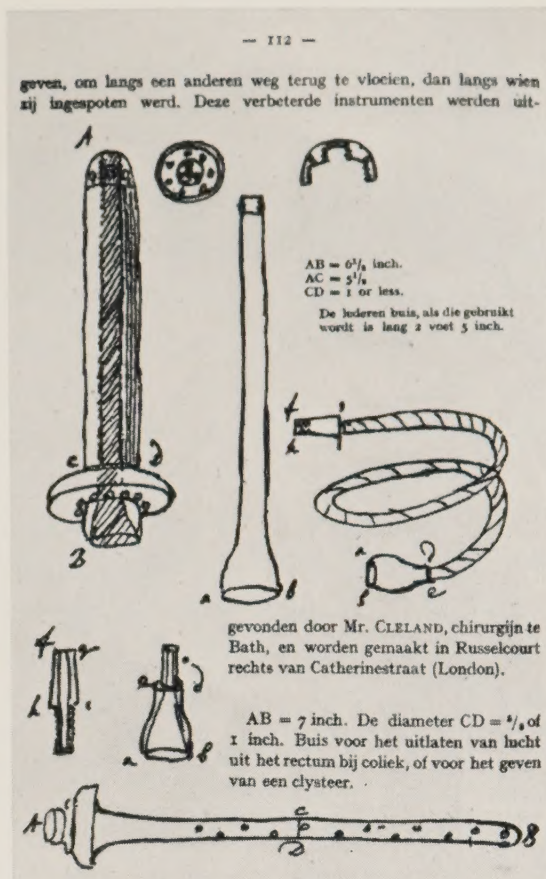


FIG. 10.—Cleland's Apparatus for Injection of the Water of Bath into the Uterus. (Camper's diary.)



FIG. 11.—Drawing by Peter Camper in Smellie's *Anatomical Tables* to illustrate a Narrow Pelvis and a "Wedged Head."

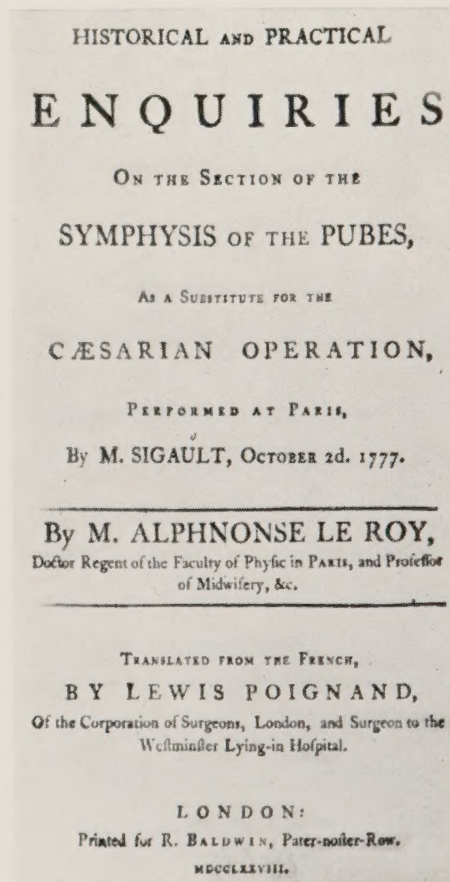


FIG. 12.—Title-page of Le Roy's Treatise on Sigault's Operation of Symphysiotomy, 1778.

who was Smellie's counterpart in France, was regarded by Smellie as "a contrivance too complex."

There is no need to repeat Smellie's rules for the use of forceps as taught in his lectures. Suffice it to say that he condemned, "the common way of pulling the head anyhow, with downright violence." His directions are very clear, and he concludes by telling the operator to "wipe the blades of the forceps singly, slide them warily into your side pockets, and then deliver the placenta."

As is well known, Smellie's name is associated with the management of breech presentations, and on this subject Camper's notes are of interest. "When the foetus has been delivered," he writes, "what is to be done if the head does not follow? Direct traction will never free the head. A finger must be inserted in the mouth and then by a rocking movement, up to F and down to G, the head is slowly freed until the face enters the hollow of the sacrum and is then extracted by drawing the body up in the usual way." (Fig. 8).

Camper's notes on version are very brief; probably he was already fully familiar with the technique. Considerable space, however, is devoted to the means of destroying the unborn child, now so fortunately abandoned. Smellie used scissors and a blunt hook for this operation, "to diminish the volume of the foetus when the head is so large or the pelvis so narrow, that it cannot pass" (Fig. 9). It is clear that Smellie had an uneasy feeling that some of those children might have been saved: "The child should never be destroyed except when it is impossible to turn, or to deliver with forceps." The epoch of Cæsarean Section had not yet arrived. Cæsarean Section was performed only after the death of the mother, and Smellie writes: "It ought to be delayed until the woman expires, and then immediately performed with a view to save the child." The leading French authority, Francois Mauriceau, wrote in his *Aphorisms* in 1739 that, "The Cæsarean Section must never be performed while the mother is living, because it would destroy her." Fielding Ould held similar views. He regarded Cæsarean Section on the living mother as "a detestable, barbarous and illegal piece of humanity," an opinion shared by William Hunter and other contemporary obstetricians. The operation had been performed unsuccessfully by Mr Smith, an Edinburgh surgeon, in 1737 (was this Robert Smith, second Professor of Midwifery, 1739-56?) and successfully by Mary Donally, an Irish midwife, in the following year. Professor Alexander Hamilton of Edinburgh advised it, in 1783, but only as a "dreadful expedient." The first successful Cæsarean Section in U.S.A. was in 1794, when Dr Jesse Bennett, in Virginia, performed it on his own wife; mother and child survived. Craniotomy was preferred until nearly the end of the nineteenth century, when the adoption of Listerian principles entirely altered the outlook. Further consideration of the Cæsarian operation would lead us too far from the present topic.

Smellie's final lecture is devoted to the puerperium and to the care

of the newborn child. Smellie did not stitch a torn perineum, holding that "it is better to leave it to Nature." The infant was to be "washed in thin beer, or in wine and water."

CAMPER'S FIRST JOURNEY TO ENGLAND: 1749

Although his notes of Smellie's lectures occupy the greater part of Peter Camper's diary of his first visit to England, there are recorded many interesting episodes. There is, for example, the note of 7th February 1749: "I was taken to Sir Hans Sloane, who is 87 years old, famous for his collection, incredibly large and costly. He lives in Chelsea, and is hard of hearing, but well preserved." On 13th February: "Saw the famous telescope made by Mr Short, belonging to Dr Stephens. We looked at the moon and saw its mountains." Short was a native of Edinburgh who achieved fame as a manufacturing optician in London and who was elected F.R.S.

During the spring, Camper paid brief visits, by stage-coach, to Oxford and Cambridge. At Oxford he notes: "All the University people wear a kind of toga, and square hats, except the servitors who wear a round bonnet." On 15th March again in London, he attended a concert at Covent Garden: "Handel himself played the organ." Three days later he "visited the Tower, and saw two lions, an eagle, and an ostrich $4\frac{1}{2}$ feet tall not counting his neck."

The entry of 2nd April describes "a visit to Greenwich by water. Was impressed by the King's yacht, beautifully gilt; Greenwich Hospital and the Royal Observatory." Next day: "I dined with Mr Jackson, chemist in Pall Mall who has a magnificent collection of minerals. His mistress, who lives with him, is one of the most beautiful girls I have seen in England." On 7th May, Camper "botanised on Primrose Hill with Welsh and Elliot, two Scottish doctors who had studied at Leyden," and on 10th May, again in medical company, he "sought herbs at Sydenham, a pretty village. On the heath is a well that yields purging water, of which I drank half a pint, and noticed the effect in the evening." A fortnight's tour in the West of England was commenced on 18th May, when, "we setted out" on horseback for Bath, arriving two days later. Camper was much impressed by Bath, by the parade and the ballroom, by the elegant buildings, the Abbey and the fine scenery all round. But he adds, "the baths are very bad, all open and no conveniency at all." At Bath, Camper "dined with Mr Cleland, the famous surgeon, and . . . saw several contrivances (which he illustrates) for the injection of Bath water into the uterus" (Fig. 10), Bristol and the Wye valley were also visited. At Bristol he saw in the square a fine statute of King William, and "was surprised to see that his horse was represented as evacuating excrement." Peter Camper's stay in England was now nearing an end. No sooner was he back in London than he set off on his homeward journey by Canterbury and Dover, then across to Boulogne, where the record ends.

THE SECOND JOURNEY: 1752

Three years later, Camper made a second journey to England. He was now thirty years old, and as he was now Professor at Franeker in Friesland he could devote only the summer vacation to travel. One of the main objects of this visit was to make some drawings for Smellie. Camper again lands at Harwich, stops the night at Colchester and then posts to London, the journey costing "two guineas, with refreshment."

"On July 14th, I hired two rooms near Dr Smellie, who was the first person I saw, as also his figures, drawn by Rymsdyk in vermilion, on a yellow background." (Now in the library of the Royal College of Physicians, Edinburgh.)

Tuesday, 18th July: "I drew for Smellie, and checked the position of the heads that are wedged (Fig. 11). Wednesday at Smellie's; dined at Hunter's and saw his figures of uterus gravidus, very beautifully drawn by Rymsdyk. I next saw several diseases of bones of which I intend to do drawings, and will therefore not write long. In the evening saw Smellie deliver a woman with forceps. I had examined the case. The operation was done quickly and the child was alive."

The next entry tells of Camper's meeting with Donald Monro, Physician to St George's Hospital, the second son of Alexander Monro (*primus*). "20th July. Professor Monro's son had supper with me and I enquired about the tearing of his father's tendo Achilles. He related to me that his father had danced the Scots measure in 1743 in his own house, and, at the finish, had torn the tendo; that Professor Plummer had torn it, and so had several other people. It is very funny that many have had the same accident in this dance."

The note on 22nd July is also interesting: "I drew for Smellie, and saw a young woman who had for three years had complete prolapse of the uterus. The uterus was right out and the vagina was reversed . . . Smellie easily pushed it in and applied Suret's pessary . . . She walked away quite at her ease."

On 23rd July, Camper breakfasted with Dr William Pitcairn and saw St Bartholomew's hospital. Among the patients was a man with jail fever which he had caught when making a hole for a ventilator in the roof of Newgate prison, as recommended by Rev. Stephen Hales. Another interesting meeting was with Samuel Sharp, who succeeded to the surgical practice of Cheselden. Camper saw Sharp remove a large tumour of the testicle, and he records that the patient died twelve days later. Sharp asked Camper to dinner and they discussed trephining, catheters, the removal of cataract and fracture of the knee-cap.

Next, we find Camper visiting the smallpox hospital, where Dr Archer told him that he had lost only two cases out of 192 inoculations, which he carried out by rubbing as it was safer than making a scratch.

On 27th July, Camper attended a forceps delivery by Smellie, after which "we examined 21 pregnant women, and guessed the time of pregnancy according to the rising of the uterus." A few days later (4th August) he "heard Smellie's lesson on face presentations." He applies the forceps and draws out the head, but guides the jaw with two fingers of one hand, and the forceps with the other, otherwise the jaw catches on the *os pubis* . . . I afterwards saw a good way of washing linen. Most people affirm that it washes quicker and with less soap." This note is illustrated by a sketch of the machine.

There are several references to William Hunter, with whom Camper had many interviews. On 12th August he spent the morning with the engineer, John Smeaton, famous as the designer of Eddystone Lighthouse, who showed Camper his air pump and his compasses, and discussed the various methods of ship-building.

The only excursion of any length on this visit to England was a tour to Worcester and Ludlow. There Camper fell ill, and "was bled by Phillips, a Tory surgeon." He was at the time the guest in a Tory household, whose members would rather die than be attended by a Whig.

Returning to London, Camper had interviews with Dr Knight, librarian of the British Museum, with Dr Fothergill, who was using fluid from the tanneries as a dressing for Scorbutic ulcer, and, of course, with Dr Smellie. He bade farewell to his London friends and returned to Holland early in September.

After Smellie and Camper thus parted in 1752, each continued to lead a busy life in his own sphere. In 1759, Smellie retired from practice and returned to Lanark, where he had a small estate close to the town with a house which he had built and named Smellom, or Smyllum. In recent years it has been enlarged and has been in use as an orphanage.

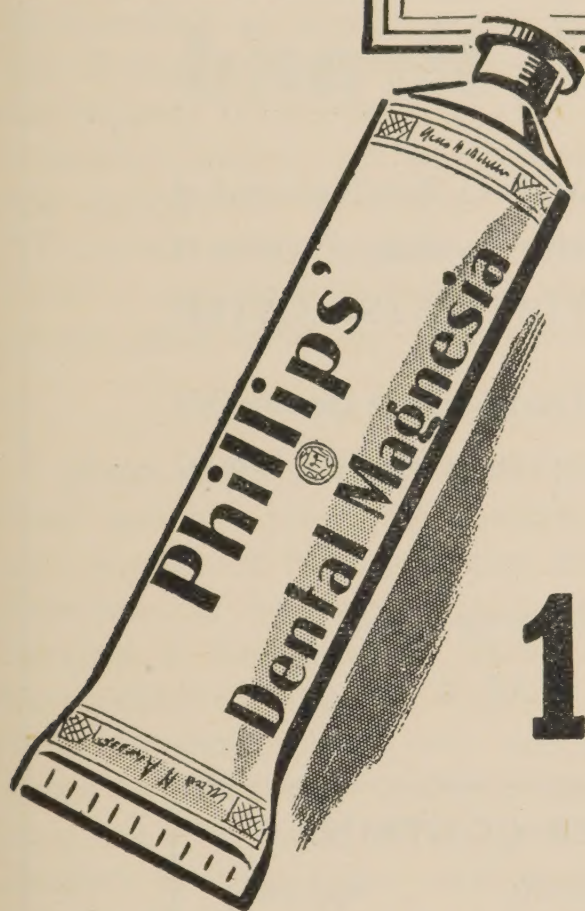
Of the later period of Smellie's life little is known, but there is a letter in the Hunterian Museum of Glasgow which shows that he had a gift of humour. It seems that before he left London, Smellie had some difference of opinion with William Hunter, and their mutual friend Dr Clephane had suggested that they should meet in a Coffee House to settle their differences. This meeting never took place, but Smellie replied to Dr Clephane in a letter purporting to come from the next world.

He dated his letter, "Shaw Park, near Tartarus, Era of Chinese Pluto, 41758," and he writes: "Some posts ago I wrote you in a hurry a little scrawl from the other world, and since you have no good body daying to bring an answer, I send a long one to plague you like an infernal spirit. This way I thought safer after retiring to the gloomy regions, than to have met in the Coffee House . . . to prevent blood and battery which perhaps would have obliged me to have kept wandering 100 years before the boatman would receive me.

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Your most humble servant, W.S."

Smellie died at Lanark four years later. The London practice had meantime passed into the hands of Dr John Harvie who had married Smellie's neice, and Harvie continued to hold it until his death in 1770. Harvie deserves to be remembered as the first to advocate expression of the placenta, a hundred years before Crédé. There is an interesting letter in the University Library of Amsterdam from William Hunter to Peter Camper, regarding the disposal of Smellie's property. The letter is dated 1778, and Hunter writes : " I have twice had the pleasure of a letter from you since I wrote you last which was upon the death of Dr Harvie, to let you know that all Dr Smellie's apparatus was to be sold. I thought that you or your friends might wish to have some of them. I bought several, particularly the original drawings." Hunter goes on to refer to two pupils sent to him by Camper, and he discusses the natural history of the rhinoceros, and inscriptions on Roman coins. His concluding sentence reads : " I am sorry for the sake of some of your works that I cannot read Dutch ; but already I know enough of you to be, with very high esteem, most faithfully yours, William Hunter."

THE THIRD AND LAST JOURNEY : 1785

Many years passed before Peter Camper visited England for the third and last time. Meanwhile he had a very busy life. He was now a man of eminence and high reputation. From the Chair at Franeker, he had gone, in 1755, to be Professor of Anatomy and Surgery at Amsterdam. There he married the wealthy widow of a burgo-master, Madame Vosma, and with her he lived very happily until her death twenty-one years later. He had three sons, Jacob, Pieter and Adriaan ; Jacob accompanied him on the third journey to England. In 1763, he accepted the Chair of Anatomy, Botany and Surgery at Groningen, and in 1776 he retired and went to live in Friesland. The last few years of his life were spent at The Hague, where he was obliged to reside, as a member of the State Council, and where he died in 1789.

Peter Camper's writings were many and varied, as might be expected from the pen of one so versatile. Perhaps his chief interest was in the application of anatomy to art, and his work on this subject is still of great interest. He had a mind like that of John Hunter, keenly interested in all the works of Nature. Like Hunter, he found large animals attractive, and he wrote a Treatise on Whales and another on the muscles of the Elephant. His name is still associated with the facial angle in man which he described. He also wrote on legal and on veterinary medicine, on inoculation, on stone and on hernia, besides a number of papers on archæology. One of his most popular works was a little book, *On the Best Form of Shoe*, (1781),

which was translated into English and French. His chief original contribution to obstetrics was a defence of symphysiotomy.

In 1785, at the age of sixty-five, restless and melancholy since the death of his wife, Camper sought solace in travel and paid his third visit to England. At least one motive for that visit was a desire to ascertain the attitude of English obstetricians to the operation of symphysiotomy. He had heard of Sigault's discovery. Who, indeed, could fail to learn of an operation which won such high approval from the French Academy that they had issued a medal to mark the event? Sigault's first opportunity to perform the operation did not occur until 1777, ten years after he first suggested it. The report states that when he cut through the symphysis, the pubic bones separated with a loud crack, and within five minutes the child was born alive.

The patient was one Madame Souchot, aged twenty-eight, whose previous four labours had been all "very bad on account of her deformity and short stature, which was only three feet eight inches high." After the operation, Madame Souchot had rather a slow and stormy convalescence, but on the 60th day she walked downstairs and was driven in a coach to the College of Physicians, where she "was able to return thanks for favours received from the greatest part of that respectable body." The good lady found herself one of the famous patients of history. Sigault, assisted by Le Roy, had achieved a triumph indeed, and the Academy did not wait for further evidence before bestowing their lavish praise and award. In the view of the Academy, it was "one of the most important discoveries of the age."

Long before then, in 1769, after the operation had been suggested, but before it had been practised, Peter Camper made the experiment of dividing the symphysis in a pig. The pig having recovered, he went a step further and sought permission to operate upon a woman who was to be executed for child murder, but the request was refused by the Government. Alphonse Le Roy, in his book, *Historical and Practical Enquiries on the Section of the Symphysis of the Pubes as a substitute for the Cæsarian Operation performed at Paris by Monsieur Sigault, October 2nd, 1777*, refers to Camper's work in the following terms:

"While the French surgeons were disputing this matter, Mr Camper, a Dutch physician, had recourse to experiment. He performed this operation on a sow, after she had littered; she continued to suckle her pigs, to eat, drink, and walk, and though she threw off the bandage which had been applied in order to favour a union of the parts, they were healed in 15 days. The experiment, being made known throughout Europe, decided one of the chief points in question, viz., the reunion of the parts, but it said nothing respecting the separation, and gave no answer to the objection made to its efficiency." (Fig. 12.)

Nevertheless, Camper, when he came to England in 1785, was able to quote six cases in support of his thesis; all the mothers re-

covered, and three children were born alive. He hoped to convince his English colleagues that at last an effective solution to the problem of the "wedged head" had been found.

By this time, Smellie and William Hunter were both dead, and most of the practice and teaching of Midwifery in London had passed into the hands of Thomas Denman (1733-1815) and William Osborn (1736-1808). In 1783 Osborn had published an essay on symphysiotomy (with notes of 25 cases known to him). It was, he said, "in no circumstances a warrantable operation." Although less dangerous than "that most fatal operation, Cæsarean section," it was equally unnecessary. Osborn's Essay eventually formed about one-third of his book, published some years later, *Essays on the Practice of Midwifery*, 1795. Denman was also opposed to symphysiotomy, an operation which, he said, "could not be adopted in London because the husbands would never permit it."

Osborn's Essay is of special significance, as he gives a detailed discussion of symphysiotomy, relating all the known cases and writings, although, curiously enough, he seems to have had no personal experience of the operation. It appears to have been the subject of many a heated debate at the end of the eighteenth century. One of the few who favoured symphysiotomy in England was John Leake who wrote an *Introduction to Midwifery*, in 1777, but he, too, had failed to make a practical test of the operation. Hamilton of Edinburgh, in his *Outlines of Midwifery*, stated that symphysiotomy was "in no case a justifiable operation."

During his visit to London in 1785, Camper arranged an anatomical demonstration to show "how easy it is to perform the *sectio ossis pubis*." Neither Denman nor Osborn attended, and the audience consisted of their pupils. Camper must have been satisfied when he wrote in his diary that "the lesson passed to my great satisfaction." The only supporter of symphysiotomy among the older practitioners was Robert Blaud, but he told Camper that "in this country they prefer to sacrifice the child."

Apart from this discussion on symphysiotomy, there is little of obstetrical interest in Camper's diary of his third journey to England during the months of October and November, 1785. He again disembarked at Harwich, and completed the journey to London by post chaise at a shilling a mile. With his observant eye he notes that in East Anglia the cattle are hornless and that they do not butt each other. Arrived in London, he spent much time in drawing specimens at the Royal Society and the British Museum; the latter he describes as "a vast collection covered with dust and arranged in no order." He also met John Hunter, who "lookes old and spoke very positively, being accustomed to be first in his art," and a few days later he "visited Mr Hunter's wonderful collection of rare things," and discussed the anatomy of the elephant, a subject which had attracted them both.

The visit to London was not all work and no play. On 20th October he records that "we went to Drury Lane Theatre to see Mrs Siddons, who is surely the best actress I have seen," and on the 22nd Camper "went with Dr Herschel to Windsor," by special coach, three hours from London, "to see his large twenty foot telescope which is able to magnify 6000 times."

He was entertained to breakfast by Dr Lind, "who showed some beautiful Chinese drawings," but who does not appear to have discussed his famous *Treatise of the Scurvy*.

On 27th October, Camper and his son set out on a tour, which included Oxford and Blenheim Palace, where he sketched the bridge. They arrived at Birmingham on 1st November, "a dirty town, full of factories, and with bad roads, not paved." A whole day was devoted to the fire-engines of Mr James Watt, the distinguished engineer. They also met Dr Withering, who stated that half the deaths between fifteen and forty years of age were caused by consumption. He said, too, that the decreased incidence of stone in the bladder was not due to drinking tea. Digitalis was not mentioned, although it was in this year, 1785, that Withering published *An Account of the Foxglove*.

After returning to London on 8th November, Camper was installed, by Sir Joseph Banks, as a member of the Royal Society, and the last entry in the *Journal*, dated 30th November, describes an anniversary dinner of the Royal Society at which many famous men were present, including Sir Joshua Reynolds, to whom Camper had the honour of showing his drawings of facial characteristics in various nationalities.

Here, the *Journal* breaks off abruptly, and there is no record of the return journey to Holland. One only wishes that Peter Camper had visited Scotland; he would have given a graphic account of the condition of medicine and science at that time. Although his is not one of the familiar names of medical history, he deserves to be remembered for his services to art and archæology, to anatomy and surgery, and, above all, to obstetrics, as one of William Smellie's most distinguished pupils.

In conclusion, I should like to acknowledge my indebtedness to Professor Miles Phillips, who originally drew my attention to Peter Camper, and to some of the works to which reference has been made in this paper.

Since the above address was delivered, it has been brought to my notice by Professor Phillips that the original drawings made by Peter Camper to illustrate William Smellie's work, are in the library of the Royal College of Physicians of Edinburgh. They were presented in 1856 by Dr J. G. M. Burt, who later became President of the College.

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PETHIDINE IN LABOUR *

By DONALD BEATON, F.R.C.S.ED., M.R.C.O.G.

SINCE pethidine hydrochloride was first used in labour seven years ago there have been published more than twenty investigations into its benefits, limitations, and indications.

The history and chemistry have already been adequately described, particularly by Gallen and Prescott,¹ and the problem of the pharmacology of the drug is outwith the scope of this communication.

Most investigators used pethidine in combination with some other drug either in part or the whole of their series^{1, 3, 6, 7, 8} and very few seem to have compared its effects with a series of simultaneous controls—a plan which would seem to be essential in estimating at least the effect on duration of labour.

There have been, on the other hand, only four reported series in which pethidine was used alone. Three of these used no controls,^{2, 4, 5} and Barnes⁹ in a series of 500 admits to a selection of cases which seemed more suitable for the use of pethidine, but states, "Ideally, of course, for the purpose of such a series pethidine should be given to alternate primigravidæ in labour."

In assessing the value of a new drug, whether clinically or experimentally, it would seem preferable to use that drug alone and not to obscure its effect by the concurrent use of another. This is particularly so in the use of pethidine, the effect of which on the duration of labour is still under review and its pharmacological action in labour still undecided.

It is also important, in assessing its value, that the element of chance is excluded as far as possible so that this may have a minimum effect on the results.

In writing of this, Professor Bradford Hill¹² points out that "in the interpretation of figures which are at the mercy of numerous influences" (and no one will deny the many influences affecting the parturient) "it is necessary to determine whether individual influences can be isolated and their effects measured. In experiments involving the treatment of a number of patients, who are to be compared with controls not given the specific treatment, any deliberate choice of individuals to be treated may lead, unconsciously, to the treated group differing from the untreated group in some characteristic, which, known or unknown, has an influence on the results. If a series of cases is large a random allocation of individuals (*e.g.* alternate cases) may reasonably be relied upon to equalise the groups in all characteristics except that under examination. Such a method of allocation does *not* obviate the necessity of testing, in the statistical analysis of

* Read at a meeting of the Edinburgh Obstetrical Society on Wednesday, 14th January 1948.